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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,512	01/05/2006	Alexander Schlutrig	C293 1030US	9958

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WOMBLE CARLYLE SANDRIDGE & RICE, PLLC  
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EXAMINER
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BARCENA, CARLOS

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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02/25/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/527,512

## Applicant(s)

SCHLUTTIG ET AL.

## Examiner

Carlos Barcena

## Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 16, 20-22, 24-26 and 28-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16, 20-22, 24-26 and 28-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### **Status of Claims**

1. The amendment filed 11/24/2009 has been entered. Claims 16, 20-22, 24-26, and 28-30 remain pending.
2. All previous 35 USC 102(b) and 103(a) rejections of claims 16, 17, 19-22, 24-26, and 28-30 as anticipated or obvious over McArthur (4,039,471), Dittmer *et al.* (6,241,826), Budin *et al.* (6,484,733) and Nojima (6,395,665) are withdrawn in light of Applicant's amendment to claim 16. Primary reference to McArthur does not teach at least one organic acid selected from the group consisting of oxalic acid, citric acid, malonic acid, and tartaric acid.
3. However, upon further consideration, a new ground(s) of rejection is made in view of D'Aniello, Jr. *et al.* (4,548,911).

### ***New Grounds of Rejection***

#### ***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. **Claims 16, 22, 24, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over McArthur (4,039,471) in view of D'Aniello, Jr. *et al.* (4,548,911).**

Regarding claims 16 and 19, McArthur teaches a process for rejuvenating automobile emission control catalysts poisoned with compounds of lead and/or phosphorus (abstract) comprising:

- (i) treating the catalyst in the presence of a substantially aqueous solution of water-soluble, alkalinely reacting salt such as ammonium acetate, ammonium tartrate, and

ammonium carbonate (col. 3, lines 10-19) with low-frequency oscillations (col. 3, lines 44-49), and

(ii) neutralizing by a subsequent treatment with inorganic acids (acetic acid, col. 4, 11-12).

The agitation of the pump serves as the low-frequency oscillations. The inorganic acid is acetic acid (col. 4, line 11-12).

McArthur does not teach at least one organic acid selected from the group consisting of oxalic acid, citric acid, malonic acid, and tartaric acid.

D'Aniello, also directed toward regeneration of a phosphorous poisoned automobile catalyst, teaches both mineral acid (inorganic acids) and dibasic organic acids (*e.g.* oxalic acid) (col. 2, lines 39-40).

It would have been obvious to one of ordinary skill in the art at the time of invention to do use a dibasic organic acid such as oxalic acid motivated by the fact that dibasic organic acids are effective in the exhaust gas rejuvenation and for safety reasons (col. 2, lines 31-33).

Regarding the safety aspect, D'Aniello further states "treatment with the inorganic mineral acids may be less expensive, but high temperature removal of the acids can create a corrosive atmosphere which may be undesirable depending on where the treatment is conducted. If the treatment is to be carried out in a garage or without removing the catalyst from its normal container, it may be preferred to use a dibasic organic acid such as oxalic acid. Heating of an oxalic acid wetted catalyst in an oxygen-containing gas stream decomposes the acid into carbon dioxide and water, which are usually innocuous byproducts" (col. 2 lines 40-43).

Regarding claim 22, McArthur teaches contacting the catalyst with the aqueous alkaline solution at a temperature of 20 °C (room temperature) to the boiling point of the salt solution (115 °C) (col. 3, lines 55-58). In example I, step (i) takes place at 94 °C (col. 5, lines 54-60).

Regarding claim 24, McArthur teaches the solvent is agitated by means of a recycle pump (col. 3, lines 44-49). In example I, the aqueous solution is circulated through the catalyst (col. 5, lines 54-60).

Regarding claim 29, McArthur discloses a final water wash after the catalyst was contacted with dilute acetic acid and subsequently oven dried at 110 °C for 3 h (col. 9, lines 13-15). The rinsing of the catalyst can also be water (col. 4, lines 11-13).

**6. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over McArthur (4,039,471) in view of D'Aniello, Jr. *et al.* (4,548,911) as applied to claim 16 above, and further in view of Dittmer *et al.* (6,241,826).**

Regarding claims 20 and 21, McArthur does not teach the further step of adding anionic, cationic, amphoteric, non-ionic or zwitterionic surfactants, wherein the amounts are between 0.01 wt.% and 0.1 wt.%.

Dittmer, also directed to a process for regenerating catalytic converters poisoned with phosphorus compounds (col. 1, lines 32-33), teaches the additions detergents, cationic or anionic surfactants in concentrations of 0.001 vol.% to 0.1 vol.% (col. 5, lines 12-13).

It would have been obvious to one of ordinary skill in the art at the time of invention to add cationic or anionic surfactants as taught by Dittmer in order to reduce surface tension (col. 5, lines 9-11) and allow for improved removal of contaminants.

It also would have been obvious to one of ordinary skill in the art at the time of the invention to add the surfactants in amounts of between 0.01 wt.% and 0.1 wt.% because a *prima facie* case of obviousness exists in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art”. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Furthermore, “[ A ] prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a *prima facie* case of obviousness.” *In re Peterson*, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003). See MPEP 2144.05[R-5].

**7. Claims 25, 26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over McArthur (4,039,471) in view of D’Aniello, Jr. *et al.* (4,548,911) as applied to claim 16 above, and further in view of Budin *et al.* (US 6,484,733 B).**

Regarding claims 25 and 26, McArthur teaches a method for the regeneration of a catalyst using agitation (low-frequency oscillations) from a pump.

McArthur is silent as to the oscillation frequency (20 to 1000 Hz) and does not teach using ultrasound is used with 10,000 to 100,000 Hz or 20,000 to 50,000 Hz.

Budin, also directed to a process for regenerating used denox catalytic converters, teaches using acoustic irradiation in two different ranges (low-frequency and ultrasound), specifically, low-frequency oscillations less than 20 Hz and ultrasound greater than 20,000 Hz in constant or pulsed amplitude (col.4, lines 20-23).

It would have been obvious to one of ordinary skill in the art at the time of invention to use ultrasound in order to more completely clean the catalyst by ejecting the compounds (contaminants) from the pores of the catalyst (Budin, col. 4, lines 25-27).

It also would have been obvious to one of ordinary skill in the art at the time of the invention to use the frequency range as recited in instant claims 25 and 26 because a *prima facie* case of obviousness exists in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art". *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Furthermore, "[ A ] prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a *prima facie* case of obviousness." *In re Peterson*, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003). See MPEP 2144.05[R-5].

Regarding claim 28, McArthur does not specifically teach subjecting the catalyst to a mechanical pretreatment step to remove fine dust or pretreatment with water.

Budin does teach a mechanical abrasion of the outermost layer may be carried out prior to the regeneration of the catalyst in order to remove compounds which are coarsely adhering to the catalyst surface, such as for example dust, or the use of other mechanical means such as suction, blowing, sandblasting, brushing or the like (col.4, lines 35-40).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of McArthur to include a pretreatment step as taught by Budin. The motivation for doing so would have been to removing any contaminant compounds adhered to the catalyst before entering the alkaline solution. This would (1) remove some of the loosely adhered contaminates and (2) extend the life of the alkaline solution.

**8. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over McArthur (4,039,471) in view of D'Aniello, Jr. et al. (4,548,911) as applied to claim 16 above, and further in view of Nojima (6,395,665).**

McArthur teaches heating the catalyst with reducing components to reactivate the deactivated catalyst (col. 4, lines 22-54).

McArthur does not teach re-impregnating the activator elements with water-soluble compounds after washing and drying the catalyst.

Nojima teaches a similar method of cleaning a denitration (denox) catalyst with aqueous alkaline solution to remove substances deposited thereon. Nojima discloses after washing and drying, the catalyst is impregnated with the active component prepared from aqueous solutions (col. 5, lines 19-25).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of Mc Arthur and incorporate the step as taught by Nojima. Nojima describes that when the catalyst are subjected an alkali cleaning treatment, catalytically active components may be dissolved out from the catalyst, thus causing a reduction in denitration power due to a decrease in the active metal concentration in the catalyst (col. 5, line 11-23). The motivation for re-impregnating the activator elements with water-soluble compounds would have been to return the catalyst back to its original catalytic levels. As such, it would be advantageous to adjust the active metal component concentration in the catalyst to its level before regeneration (col. 5, lines 20-23).

#### ***Response to Arguments***

9. Applicant's arguments with respect to claims 16, 20-22, 24-26, and 28-30 have been considered but are moot in view of the new ground(s) of rejection. D'Aniello, Jr. *et al.* (4,548,911) has been used to cure the newly added limitation of at least one organic acid selected from the group consisting of oxalic acid, citric acid, malonic acid, and tartaric acid.



***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Barcena whose telephone number is (571) 270-5780. The examiner can normally be reached on Monday through Thursday 8AM - 5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Michener can be reached on (571) 272-1424. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J.A. LORENZO/  
Supervisory Patent Examiner, Art Unit 1793

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